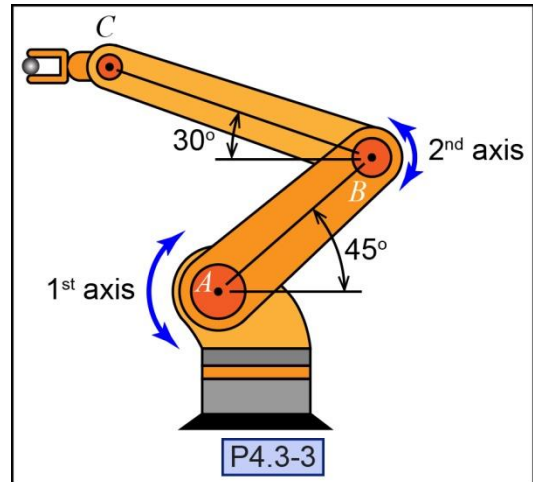


**P4.3-3)** Consider the articulated robot arm shown. The motor at the fixed joint  $A$  drives arm  $AB$  with a constant counterclockwise angular velocity of  $2 \text{ rad/s}$ . The motor at joint  $B$  drives arm  $BC$  with a clockwise angular velocity of  $3 \text{ rad/s}$  that is decreasing at a rate of  $1 \text{ rad/s}^2$ . If arm  $AB$  has length  $1.7 \text{ m}$  and arm  $BC$  has length  $2.5 \text{ m}$ , determine the acceleration of joint  $C$  at the instant pictured.

Given:



Find:

Solution:

#### Acceleration of $B$

Draw a coordinate system on the figure.

Draw  $\omega_{AB}$  on the figure.

Calculate the acceleration of point  $B$ .

$\mathbf{a}_B =$  \_\_\_\_\_

#### Acceleration of $C$

Draw  $\omega_{BC}$  and  $\alpha_{BC}$  on the figure.

Calculate the acceleration of point  $C$ .

$\mathbf{a}_C =$  \_\_\_\_\_